

May 17, 2012

Federal Communications Comments
Comments to DA 12-523

My name is Ron Hashiro, amateur radio operator AH6RH. I am a communications volunteer with Hawaii State Civil Defense, participating in the SCD RACES program and also with the ARES program in Hawaii.

Attached are my comments to the Request for Comments DA 12-523 seeking information on impediments to emergency communications.

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Sincerely,

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1. Importance of emergency Amateur Radio Service communications. As noted above, the statute requires a review of the importance of emergency Amateur Radio Service communications relating to disasters, severe weather, and other threats to lives and property.

a. What are examples of disasters, severe weather, and other threats to life and property in which the Amateur Radio Service provided communications services that were important to emergency response or disaster relief? Provide examples of the important benefits of these services.

Amateur radio was used during Hurricane Iniki in 1993 to establish communications with the Office of Kauai Mayor Yukimura during the peak of the hurricane. Inter-island phone service was lost when the inter-island microwave system failed earlier in the day. A radio-telephone patch was established during the peak of the storm with Hawaii Governor John Waihee that confirmed the severity of damage, that a disaster declaration was forthcoming, to outline initial needs and to confirm that State and Federal help would be coming as soon as the hurricane conditions abated.

Dozens of health and welfare messages, and coordination messages were handled via two meter and NVIS HF communications overnight. Public information was handled via radio to be broadcasted via Oahu AM broadcast stations back to the affected listeners on Kauai. Kidney dialysis patients were given instructions on how to get evacuated to Lihue Airport for transport and continued treatment on Oahu.

At first light, Hawaiian Telephone engineers who also were amateur radio operators landed by helicopter and started repairs on the inter-island telephone microwave system that was severely damaged by the Category 3 hurricane force winds. Amateur radio two-meter radio communications were used to coordinate dish alignment and real-time transmissions testing. Without the radios and communications, inter-island service would be delayed by hours or even days.

These are a few highlights of amateur radio operations during Hurricane Iniki.

<http://www.qsl.net/ah6rh/am-radio/articles/iniki.html>

b. Under what circumstances does the Amateur Radio Service provide advantages over other communications systems in supporting emergency response or disaster relief activities? Under what circumstances does the

Amateur Radio Service complement other forms of communications systems for emergency response or disaster relief?

Amateur Radio operators are distributed within the affected community. They do not have to move many miles to get into and provide communications within the affected community. They have access to over twenty frequency bands and can select the proper bands that are propagating and establish two-way communications. This contrasts Land Mobile, Marine, Aircraft, Public Service or Commercial Radio Service that are limited to discrete frequency bands and might not be able to choose amongst several HF, VHF, UHF and SHF bands to communicate. Amateur operators outside of the affected communities would try to establish contacts with the affected hams.

Amateur radio complements these and other radio services to establish point-to-point, mobile and other types of communications. Amateurs could be quickly positioned in office buildings, vehicles, community shelters, boats, planes, helicopters to provide communications as was shown in Iniki.

c. What Federal Government plans, policies, and training programs involving emergency response and disaster relief currently include use of the Amateur Radio Service? What additional plans, policies, and training programs would benefit from the inclusion of Amateur Radio Service operations? How would Amateur Radio Service operations fit into these plans and programs?

d. What State, tribal, and local government plans, policies, and training programs involving emergency response and disaster relief currently include use of the Amateur Radio Service? What additional plans and programs would benefit from the inclusion of Amateur Radio Service operations? How would Amateur Radio Service operations fit into these plans and programs?

Currently, the Hawaii State Civil Defense has an active amateur radio program for emergency response in the form of SCD RACES. Some of the State Hospitals with employees or volunteers that are amateur radio operators are with our HealthComm program that provides coordination, training and practice in amateur radio emergency communications for public and private healthcare institutions. The Department of Education and the University of Hawaii are at the early stages of establishing an amateur radio emergency communications program.

Similarly at the County level, the county Civil Defense organizations have their RACES/ARES programs. Various police, fire and medical response

organizations, and utilities have implemented amateur radio emergency communications programs in varying degrees.

Some of the amateur radio operators are also affiliated with the MARS service, and can communicate or coordinate with the military.

All of these agencies and organizations would be able to establish basic communications capabilities with each other to request and coordinate response during times of emergencies and outages of public communications.

e. What changes to the Commission's emergency communications rules for the Amateur Radio Service (Part 97, Subpart E) would enhance the ability of amateur operators to support emergency and disaster response? In addition, are there any specific changes that could be made to the technical and operational rules for the Amateur Radio Service (Part 97, Subparts B, C, and D) that would enhance the ability of amateur operators to support emergency and disaster response? What other steps could be taken to enhance the voluntary deployment and effectiveness of Amateur Radio Service operators during disasters and emergencies?

Within Part 97, Subpart E, an additional class of messages within 97.407(d) is needed. It would be the ability to transmit and relay information on frequencies and net schedules available to stations in RACES so they can align their operations during the time of emergency.

Within Part 97, Subparts B, C and D, enhancements that would enable amateurs to run Wi-Fi traffic crossbanded to long-range high speed data equipment within the amateur radio band, and accept transmitter identification within existing Wi-Fi means would stir interest, development and deployment of higher power, long-range high speed data equipment and networks within the amateur radio service at 2.3 GHz and above. This prepositioning of wireless data network backbones would enhance service to public first responders that are increasingly using wireless IP technology for their operations, and be available to amateurs for their daily radio communications and testing.

f. What training from government or other sources is available for Amateur Radio Service operators for emergency and disaster relief communications? How could this training be enhanced? Should national training standards be developed for emergency communications response?

The ARRL (Amateur Radio Relay League) currently offers the amateur radio community a course on Emergency Communications on a national basis.

Training is also available via local amateur radio clubs, ARES/RACES programs and other small formal and informal groups.

Training is also available via the web:

<http://www.qsl.net/ah6rh/am-radio/emcomm/>

The training offered should stress NIMS compliance and include exchanging messages formatted according to the ICS-213 message form.

g. What communications capabilities, e.g., voice, video, or data, are available from Amateur Radio Service operators during emergencies and disasters? Are there any future technical innovations that might further improve the Amateur Radio Service?

Existing communications capability include direct voice communications, repeater networks, Voice-Over-IP networks, Morse code, APRS (Automatic Position Reporting System), various digital modes such as PSK31 and MT63, DSTAR voice and data, and amateur television.

As mentioned in 1e above, Wi-Fi-based standards and equipment that promote wireless IP communication should be encouraged and developed.

h. Are national standards in data transmission needed to enhance the ability of Amateur Radio Service operators to respond to emergencies and disasters? Are there restrictions with regard to transmission speeds that, if removed, would increase the ability of operators to support emergency/disaster response? If so, what issues could arise from removing these restrictions?

Wireless IP communications should be encouraged. Currently it is consumerized as Wi-Fi networks. Any means of adapting and using consumer Wi-Fi by amateur radio operators into the amateur radio service to provide next generation data communications would be welcome. Having higher power beyond Part 15 to extend the effective range would be welcome.

The current limitations are not in terms of transmission speeds, but are in the area of transmitter identification and media access (carrier collisions). Finding a regulatory balance between transmitter identification and media access/hidden transmitter problem would be welcome. As an illustration, one possibility is to allow automatic identification of the station in morse code 200 kHz away from the band edge of the active data channel – which would preserve the native Wi-Fi within the active data channel. The morse code ID station need not be the same physical transmitter as the Wi-Fi transmitter.

i. Would it enhance emergency response and disaster relief activities if Amateur Radio Service operators were able to interconnect with public safety land mobile radio systems or hospital and health care communications systems? What could be done to enable or enhance such interconnections? What issues could arise from permitting such interconnections?

Enhanced response could be achieved if amateurs were able to provide to the disaster relief agencies reliable, long-haul Wi-Fi based network service that can be used to interconnect and provide IP, ISP and SIP type services.

Comment 1h above would be an illustration of the type of enabling enhancements.

The issues that would arise would be in coordinating ahead of time and/or during the time of the event IP addressing and quality-of-service parameters. This is an planning, design and implementation issue that would need to be coordinated on a local and/or regional basis.

j. Should there be national certification programs to standardize amateur radio emergency communications training, mobilization, and operations? How would such programs improve emergency communications?

The ARRL currently offers a national certification program in standardized amateur radio emergency communications. The program offers a framework and unified approach to amateur radio emergency communications and has accomplished much in this area since its inception in 2000.

2. Impediments to enhanced Amateur Radio Service communications. The statute also requires that the study identify impediments to enhanced Amateur Radio Service communications and recommendations regarding the removal of such impediments.

a. What private land use restrictions on residential antenna installations have amateur radio operators encountered? What information is available regarding the prevalence of such restrictions? What are the effects of unreasonable and unnecessary restrictions on the amateur radio community's ability to use the Amateur Radio Service? Specifically, do these restrictions affect the amateur radio community's ability to respond to disasters, severe weather, and other threats to lives and property in the United States? What actions can be taken to minimize the effects of these restrictions?

Currently, the house rules for the CC&R for my property reads in part:

Visible Aesthetics ... No awning, venetian blinds, window guards, radio, or television antenna or planters shall be attached to or hung from the exterior of any building or protrude through the walls, windows or roof thereof, and no notice, advertisement, bill, poster, illumination or other sign shall be inscribed or posted on or about the Project, unless approved in writing by the Board of Directors. ...

These restrictions limit my ability to communicate on VHF and UHF as extending a whip antenna made from fine black-colored spring steel past the boundary and plane of the window would enable me to better access repeaters that are at lower heights and farther away than can be access by antennas within the apartment.

Similarly, these restrictions effectively eliminate the use of HF mobile antennas positioned out the window or over the balcony that enable me to establish NVIS HF communications within the Hawaiian Islands.

Since aesthetics is cited as the rationale for the restriction, the temporary use of an antenna protruding during night hours should not impede the limited aesthetics at night. Allowing antennas for a maximum of a prescribed number of days a month would not have a persisting effect on aesthetics.

To date, I have not yet approached or discussed these items with the Board of Directors. My normal operating position would be at the State Civil Defense Headquarters EOC at Diamond Head and the disasters to date have not required me to supplement the operations by providing additional communications from home.

b. What criteria distinguish “unreasonable or unnecessary” private land use restrictions from reasonable and necessary restrictions? How do local circumstances, such as neighborhood density or historic significance, affect whether a private land use restriction is reasonable or necessary? How does the availability of alternative transmitting locations or power sources affect the reasonableness of a particular private land use restriction?

An unreasonable and unnecessary private land use restriction would be based on aesthetics that covers night hours. There is limited visibility at night, so aesthetics is not an issue.

Restrictive local circumstances might exclude the ability to install wire antennas or vertical antennas. These antennas could provide basic communications with neighboring and distant repeater stations, and establish basic NVIS HF communications. While it might fit the exact historical character of a building such as a historical auditorium, the ability to install these minimal types of antennas would greatly enhance and

prepare such a building to provide communications and serve as an evacuation shelter.

c. What steps can amateur radio operators take to minimize the risk that an antenna installation will encounter unreasonable or unnecessary private land use restrictions? For example, what obstacles exist to using a transmitter at a location not subject to such restrictions, or placing an antenna on a structure used by commercial mobile radio service providers or government entities.

Typically for joint access to commercial mobile radio service or government agencies, a working agreement and self-funding is needed. Often at a crowded and dense site, the extra level of RF interference requires additional components such as circulators and combiners that drives up the installation cost. Typically, private individuals and small groups are unable to fund the combined cost of low loss feedline, heavy duty gain antennas, RF and lightning protection, community equipment such as combiners and potentially Internet ISP access.

If the group desired to place an HF station at the community/government site, the support structure for an HF antenna, the potential for baseband radio interference into the CMRS/government radio equipment would discourage the CMRS/government sponsor from allowing the HF equipment into the site.

The RF levels at a typical broadcast site for FM broadcast or TV station would frequently exceed with mitigating measures a local amateur radio group could afford in placing HF, VHF or UHF equipment into the broadcast site.

Placing an amateur radio station within an office building or school environment is futile. The RF interference from building air conditioning mechanical systems, lighting, PCs and similar existing equipment renders communications with anything but the strongest stations futile. Typically for HF operations, we see constant S7 to S9 noise. Using a larger antenna only compounds the problem. We are unable to provide communications for County RACES, and for the National Weather Service office in Honolulu as two examples of this limitation, during a disaster, we would need to place the HF radio in a vehicle nearby, then cross-band the audio and PTT to a VHF/UHF radio, or a GHz+ range IP-based radio.

d. Do any Commission rules create impediments to enhanced Amateur Radio Service communications? What are the effects of these rules on the amateur radio community's ability to use the Amateur Radio Service? Do disaster and/or severe weather situations present any special circumstances wherein Commission rules may create impediments that would not otherwise exist in

non-disaster situations? What actions can be taken to minimize the effects of these rules?

e. What other impediments to enhanced Amateur Radio Service communications have amateur radio operators encountered? What are the effects of these impediments on the amateur radio community's ability to use the Amateur Radio Service? Specifically, do these impediments affect the amateur radio community's ability to respond to disasters, severe weather, and other threats to lives and property in the United States? What actions can be taken to minimize the effect of these impediments?

CC&R restrictions in subdivisions pose an impediment to enhanced Amateur Radio Service communications. Most new land development in Hawaii come with CC&R restrictions, and therefore limit amateur radio antennas. By limiting the ability to get on the air and gain practice, these communities will not have amateur radio operators ready to communicate during a disaster to the extent that could have been done otherwise.

An example from 1992 during Iniki was the CC&R community of Princeville on the north end of Kauai. A resident suffered major upper abdominal wounds when the plate glass window near him shattered. With the phone lines down, the person's fate had to be relayed by radio. Due to the CC&R, amateurs residing in Princeville could not install the HF antennas and did not have the radio equipment on hand that would have maintained around-the-clock real-time communications with the hospital at Lihue on the southern end of the island and with the evacuation helicopters that had to be flown in from Oahu the next morning. Instead, messages had to be relayed via multiple VHF/UHF radio systems and radio services to coordinate the medical evacuation from Oahu, to Princeville, to Lihue. NVIS HF communications would have greatly simplified the operations with direct point-to-point real-time communications between Princeville, the hospital in Lihue, SCD on Oahu and the military.

f. The legislation requires the Commission to identify "impediments to enhanced Amateur Radio Service communications." What specific "enhance[ments]" to Amateur Radio Service communications have been obstructed by the impediments discussed above?

1. Ability to install VHF, UHF, SHF antennas (vertical and directional) either on temporary basis, or semi-permanent basis in CC&R environments. Since there is no incentive to obtain/install/use these antenna, these antennas and corresponding radios are not available at the time of the emergency.

2. Similarly, the ability to install HF antennas on a temporary or semi-permanent basis in CC&R environments. This has a greater effect, as it takes more effort to install the larger HF antenna, and therefore the number of potential HF radio installations is correspondingly more affected than the VHF/UHF/SHF stations in #1 above. NVIS HF communications is considered our primary state-wide inter-island communications mode during a disaster so this impediment has a major impact.
3. The limited availability and penetration of Wi-Fi type high speed digital radios for FCC-compliant use within the amateur radio service is an impediment to enhanced IP-based Amateur Radio Service communications.
4. The general incompatibility of radio installations within office buildings in locations other than a conditioned radio room on the roof of the building.